

What is claimed is:

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1. A silicon/silicon carbide composite comprised of 45 to 75 weight% of silicon and 25 to 55 weight% of silicon carbide, said silicon carbide being formed from an assembly of fibers each having a thickness of 150 μm or less and a length of 0.8 to 3.5 mm.

2. A silicon/silicon carbide composite according to claim 1, wherein said silicon/silicon carbide composite has a silicon carbide film having a thickness of 30 to 500 μm formed on the surface thereof.

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3. A silicon/silicon carbide composite according to claim 1 or 2, wherein said silicon/silicon carbide composite includes a dummy wafer with a silicon carbide film having a thickness of 30 to 150 μm formed on the surface thereof, said dummy wafer having a total thickness of 0.5 to 1 mm.

4. A silicon/silicon carbide composite according to claim 1 or 2, said silicon/silicon carbide composite includes a semiconductor heat treatment member.

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5. A silicon/silicon carbide composite according to claim 3, wherein said silicon carbide composite includes a semiconductor heat treatment member.

6. A process for manufacturing a silicon/silicon carbide composite comprising a first step in which cellulose fibers each having a fiber thickness of 150 μm or less are heated at a temperature of 500°C to 1500°C in a non-oxidizing

atmosphere to obtain a porous carbon body having a bulk density of 0.10 to 0.80 g/cm³;

and a second step in which said porous carbon body is silicified in an atmosphere containing silicon.

7. A process for manufacturing a silicon/silicon carbide composite according to claim 6, wherein said thickness of each cellulose fiber is within a range of 5 to 80 μ m.

8. A process for manufacturing a silicon/silicon carbide composite according to claim 6 or 7, wherein the length of each cellulose fiber is 1.5 mm or more.

9. A process for manufacturing a silicon/silicon carbide composite according to claim 6 or 7, wherein said cellulose fiber is paper pulp.

10. A process for manufacturing a silicon/silicon carbide composite according to claim 8, wherein said cellulose fiber is paper pulp.

11. A process for manufacturing a silicon/silicon carbide composite according to claim 6, 7 or 10, wherein the bulk density of the porous carbon body produced by said first step is 0.70 g/cm³ or less.

12. A process for manufacturing a silicon/silicon carbide composite according to claim 6, 7, or 10, in which a silicification treatment in said second step is conducted by either a reaction with fused silicon or a reaction with silicon

monoxide gas.

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13. A process for manufacturing a silicon/silicon carbide composite according to claim 8, wherein a silicification treatment in said second step is conducted by either a reaction with fused silicon or a reaction with silicon monoxide gas.

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14. A process for manufacturing a silicon/silicon carbide composite according to claim 11, wherein a silicification treatment in said second step is conducted by either a reaction with fused silicon or a reaction with silicon monoxide gas.

15. A process for manufacturing a silicon/silicon carbide composite according to claim 6, 7, 10, 13 or 14, wherein the porous carbon body produced by said first step is heated at a temperature of 1100°C to 2000°C in an atmosphere of halogen gas to be purified prior to the second step.

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16. A process for manufacturing a silicon/silicon carbide composite according to claim 8, wherein the porous carbon body produced by said first step is heated at a temperature of 1100°C to 2000°C in an atmosphere of a halogen gas to be purified prior to the second step.

17. A process for manufacturing a silicon/silicon carbide composite according to claim 12, wherein the porous carbon body produced by said first step is heated at a temperature of 1100°C to 2000°C in an atmosphere of a halogen gas to be

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